2.4 Noise

An acoustical impact analysis was prepared to determine the potential for short- and long-term noise impacts as a result of Project implementation. The report, titled, "Preliminary Noise Study Otay Business Park Development" (dated July 13, 2010), was prepared by Urban Crossroads and is provided as Appendix G to this EIR.

2.4.1 Existing Conditions

2.4.1.1 Noise Definitions

Noise is generally defined as unwanted or annoying sound that is typically associated with human activity and which interferes with or disrupts normal activities. Although exposure to high noise levels has been demonstrated to cause hearing loss, the principal human response to environmental noise is annoyance. The response of individuals to similar noise events is diverse and influenced by the type of noise, the perceived importance of the noise and its appropriateness in the setting, the time of day, and the sensitivity of the individual hearing the sound. The minimum change in sound level that the human ear can detect is approximately 3 decibels (dB). A change in sound level of 10 dB is usually perceived by the average person as a doubling (or halving) of the sound's loudness.

The method commonly used to quantify environmental sounds consists of determining all of the frequencies of a sound according to a weighting system that reflects the nonlinear response characteristics of the human ear. This is called "A" weighting, and the decibel level measured is called the A weighted sound level (or dBA). The sound measure employed by the State of California and the County of San Diego is known as the Community Noise Equivalence Level (CNEL) which is defined as the "A" weighted average sound level for a 24-hour day. It is calculated by adding a 5-decibel penalty to sound levels in the evening (7:00 p.m. to 10:00 p.m.), and a 10-decibel penalty to sound levels in the night (10:00 p.m. to 7:00 a.m.) to compensate for the increased sensitivity to noise during the quieter evening and nighttime hours.

Although the A-weighted sound level may adequately indicate the level of environmental noise at any instant in time, community noise levels vary continuously. Most environmental noise includes a conglomeration of sounds from distant sources that create a relatively steady background noise in which no particular source is identifiable. For this type of noise, a single descriptor called the "Leq" (or equivalent sound level) is used. Leq is the energy-mean A-weighted sound level during a measured time interval. It is the equivalent constant sound level that would have to be produced by a given source to equal the average of the fluctuating level measured.

2.4.1.2 Ambient Sound Measurement Results

To determine existing noise levels at the proposed Project site under existing conditions, a sound level meter was placed on-site adjacent to the future intersection of Alta Road and Airway Road. Because the Project site is vacant and produces no operational noise, and because Alta Road, Airway Road, and Siempre Viva Road have not been extended to the Project site, most of the existing noise on-site occurs from environmental ambient noise. The results of the sound level monitoring are shown below in Table 2.4-1, *Measured Ambient Sound Levels*.

Table 2.4-1 MEASURED AMBIENT SOUND LEVELS

Location	Primary Noise Source	Measured Noise Levels (dBA Leq)	Measured Noise Levels (dBA CNEL)
Along future intersection of Alta Road and Airway Road	Ambient Environmental Noise	45.7	45.8

Source: Urban Crossroads (July 13, 2010)

2.4.1.3 Noise Contours

Existing noise contours were developed for off-site roadways. Noise contours are lines that are drawn around a noise source, indicating a constant or equal level of noise exposure. The contours are representative of present-day conditions associated with existing traffic volumes. Noise contour calculations are presented in the Preliminary Noise Analysis included in Appendix G to this SEIR. Table 2.4-2, *Existing Conditions Noise Contours*, indicates the distance from the centerline of a respective roadway in the Project's vicinity to various CNEL contours.

2.4.1.4 Noise Element Criteria

The County has adopted interior and exterior noise standards as part of the County's Noise Element of the General Plan for assessing the compatibility of land uses with transportation related noise impacts. For assessing noise impacts to noise-sensitive land uses, the County requires an exterior noise level of less than 60 dBA CNEL for outdoor living areas and an interior noise standard of 45 dBA CNEL.

2.4.1.5 Applicable Regulatory Requirements

State Regulations and Standards

California Noise Control Act

This section of the California Health and Safety Code [Sections 46000-46080] finds that excessive noise is a serious hazard to the public health and welfare and that exposure to certain levels of noise can result in physiological, psychological, and economic damage. It also finds that there is a continuous and increasing bombardment of noise in the urban, suburban, and rural areas. The California Noise Control Act declares that the State of California has a responsibility to protect the health and welfare of its citizens by the control, prevention, and abatement of noise. It is the policy of the State to provide an environment for all Californians free from noise that jeopardizes their health or welfare.

California Noise Insulation Standards

In 1974, the California Commission on Housing and Community Development adopted noise insulation standards for multi-family residential buildings (Title 24, Part 2, California Code of Regulations). Title 24 establishes standards for interior room noise (attributable to outside noise sources). The regulations also specify that acoustical studies must be prepared whenever a residential building or structure is proposed to be located near an existing or adopted freeway route, expressway, parkway, major street, thoroughfare, rail line, rapid transit line, or industrial noise source, and where such noise source or sources create an exterior CNEL (or Ldn) of 60 dB or greater. Such acoustical analysis must demonstrate that the residence has been designed to limit intruding noise to an interior CNEL (or Ldn) of at least 45 dB.

Local Regulations and Standards

San Diego County General Plan, Noise Element, (Part VIII)

The Noise Element of the County of San Diego General Plan establishes limitations on sound levels to be received by noise sensitive land uses (NSLUs). New development may cause an existing NSLU to be affected by noise caused by the new development, or it may create or locate a NSLU in such a place that it is affected by noise. The Noise Element identifies airports and traffic on public roadways as the major sources of noise.

The Noise Element states that an acoustical study is required if it appears that a NSLU would be subject to noise levels of CNEL equal to 60 decibels (A) or greater. If that study confirms that greater than 60 dB CNEL would be experienced, modifications that reduce the exterior noise level to less than 60 dB CNEL and the interior noise levels to below 45 dB CNEL must be made to the development. If these modifications are not made, the development shall not be approved unless a finding is made that specific social or economic considerations warrant project approval; provided, that if the noise level would exceed 75 dB CNEL(A) even with such modifications, the development shall not be approved irrespective of such social or economic considerations.

"CNEL" is the Community Noise Equivalent Level, which is a 24-hour averaged measurement based upon the "(A)" or A-weighted sound levels, with certain penalties assigned to evening and nighttime noise, as described in Chapter 2 of the Noise Element. "Development" is defined as any physical development including but not limited to residences, commercial or industrial facilities, roads, civic buildings, hospitals, schools and airports. A "NSLU" is defined as any residence, hospital, school, hotel, resort, library, or any other facility where quiet is an important attribute of the environment. "Exterior Noise" means noise measured at an outdoor living area that meets specified minimum area requirements for single family detached dwelling projects, and for other projects it means noise measured at all exterior areas which are provided for group or private usable open space.

The Noise Element includes special provisions for County road construction projects and interior noise levels in rooms that are usually occupied only a part of the day (schools, libraries, etc.).

County of San Diego Noise Ordinance

The County of San Diego Noise Ordinance [San Diego County Code of Regulatory Ordinances. Title 3. Division 6. Chapter 4. Section 36.401] establishes prohibitions for disturbing, excessive, or offensive noise, and provisions such as sound level limits for the purpose of securing and promoting the public health, comfort, safety, peace, and quiet for its citizens. Planned compliance with sound level limits and other specific parts of the ordinance allows presumption that the noise is not disturbing, excessive, or offensive. Limits are specified depending on the zoning placed on a property (e.g., varying densities and intensities of residential, industrial and commercial zones). Where two adjacent properties have different zones, the sound level limit at a location on a boundary between two properties is the arithmetic mean of the respective limits for the two zones, except for extractive industries. It is unlawful for any person to cause or allow the creation of any noise that exceeds the applicable limits of the Noise Ordinance at any point on or beyond the boundaries of the property on which the sound is produced. Furthermore, the Noise Ordinance allows the County to grant variances from the noise limitations for temporary on-site noise sources, subject to terms and conditions intended to achieve compliance.

The Noise Ordinance specifies one-hour average sound level limits (measured at the property boundary). All development projects in the County are required to comply with the sound level limits established Section 36.404 of the Noise Ordinance, which are summarized in Table 2.4-3, *San Diego County Code Section 36.404 Sound Level Limits*.

In addition, the County of San Diego Noise Ordinance, Section 36.410, governs construction noise emissions, such as those that would be generated during construction of the proposed Project. Specifically, Section 36.410 requires the following:

a) It shall be unlawful for any person to operate construction equipment between the hours of 7 p.m. and 7 a.m. of the following day.

b) It shall also be unlawful for any person to operate construction equipment on Sundays, and days appointed by the President, Governor, or the Board of Supervisors for a public fast, Thanksgiving, or holiday, but a person may operate construction equipment on the above-specified days between the hours of 10 a.m. an 5 p.m. at his residence for the purpose of constructing a residence for himself, provided that the average sound level does not exceed 75 decibels during the period of operation and that the operation of construction equipment is not carried out for profit or livelihood.

c) It shall also be unlawful to operate any construction equipment so as to cause at or beyond the property line of any property upon which a legal dwelling unit is located an average sound level greater than 75 decibels between the hours of 7 a.m. and 7 p.m.

2.4.2 Analysis of Project Effects and Determination as to Significance

2.4.2.1 East Otay Mesa Specific Plan Final EIR

The Final EIR for the EOMSP concluded that implementation of the uses identified by the EOMSP would result in significant and unmitigable impacts to residential areas and sensitive habitats/species from industrial/commercial uses and roadways. Mitigation measures were identified to reduce these impacts to the maximum feasible extent, although the mitigation measures were described as not fully mitigating noise impacts to less than significant levels.

In order to comply with the mitigation measures from the EOMSP Final EIR, a Project-specific noise impact analysis was prepared to identify Project-specific impacts and to identify additional mitigation measures, if necessary, to further reduce these impacts. In addition, a number of minor changes to the existing noise environment, surrounding land uses, and noise standards have occurred since the EOMSP was approved in 1994. Accordingly, the County determined that an additional site-specific analysis was necessary to determine whether additional mitigation measures are available to further reduce impacts and to ensure that the noise levels comply with the current standards as specified in the County's General Plan Noise Element.

2.4.2.2 Noise Sensitive Land Uses Affected by Airborne Noise

Guidelines for the Determination of Significance

The Project would have a significant adverse effect on noise if any of the following would occur as a result of a Project-related component:

(1) Project implementation would result in the exposure of any on- or off-site existing or reasonably foreseeable future Noise Sensitive Land Use (NSLU) to exterior or interior noise (including noise

generated from the Project, together with noise from roads [existing and planned Circulation Element roadways], railroads, airports, heliports, and all other noise sources) in excess of any of the following:

A. Exterior Locations:
i. 60 dB CNEL; or
ii. An increase of 10dB (CNEL) over pre-existing noise.

B. Interior Locations:
45 dB (CNEL) except for the following cases:
i. Rooms which are usually occupied only a part of the day (schools, libraries, or similar facilities), the interior one-hour average sound level due to noise outside should not exceed 50 decibels (A).
ii. Corridors, hallways, stairwells, closets, bathrooms, or any room with a volume less than 490 cubic feet.

Threshold 1 is analyzed in this SEIR to determine if the proposed Project would be consistent with the San Diego County General Plan Noise Element Policy 4b, which establishes local noise standards for noise sensitive land uses.

Analysis

Noise Effects to On-Site Noise Sensitive Land Uses

The proposed Project consists of a subdivision and ultimate development of the site would be consistent with the East Otay Mesa Specific Plan (EOMSP), which designates the site for mixed industrial land uses. The EOMSP does not permit NSLUs to be developed on-site. Therefore, implementation of the Project and future development of the site would not result in the exposure of any on-site NSLUs to unacceptable noise levels.

Noise Effects due to Long-Term Operation (Non-Vehicular)

Typical sources of noise associated with mixed industrial development may include: rooftop mechanical ventilation units, truck traffic, truck loading/unloading, trash compactors, forklifts, and generators. The proposed Project would subdivide the property into 58 lots to facilitate the ultimate development of the site with mixed industrial land uses; however no specific land uses or structures are proposed at this time. Because specific details related to the ultimate uses and physical layout of on-site structures are not reasonably foreseeable at this time, it is impossible to project operational noise levels for the site due to the large number of unknown variables. Regardless, EOMSP Section 3.1.2, *Development Regulations*, includes a subsection entitled, "Performance Standards," which indicates that "Light Industrial uses [within the EOMSP] shall comply with Section 6310.d" of the County Zoning Ordinance. Section 6310.d of the San Diego County Zoning Ordinance specifies an exterior noise limit of 75dBA Leq at the property line. The EOMSP designates all areas within the vicinity of the Project site for industrial and/or commercial land uses. There are no existing NSLUs in the vicinity of the Project site (on the U.S. side of the border), and the EOMSP does not permit the future development of NSLUs in areas surrounding the property. Accordingly, long-term operation of the Project (on-site) would not expose existing or reasonably foreseeable NSLUs (on the U.S. side of the border) to noise levels in excess of County standards (*i.e.*, 60 dBA for exterior locations, 45 dBA for interior locations).

The portions of the Project site proposed for mixed industrial development are located between approximately 330 and 490 feet north the nearest existing land uses in Mexico. Based upon a recent aerial photograph, NSLUs (high density residential uses) are located south of the U.S.-Mexico border in the vicinity of the Project site. Because the Project would be required to comply with Section 6310(d) of the San Diego County Zoning Ordinance, it was assumed that the noise level at the southern Project boundary would be 75 dBA, which would be reduced to approximately 53.6 dBA at a distance of 330 feet, and would be reduced further as the distance from the site increased. It is also important to note that a U.S. Border Patrol Corridor, a 16-foot high fence, and a heavily traveled trucking corridor (on the Mexico side of the border) lie between the Project site and existing NSLUs in Mexico, and noise generated by the Project is not anticipated to be above existing ambient conditions. Accordingly, long-term operation of the Project would not expose NSLUs in Mexico to unacceptable noise levels (*i.e.*, 60 dBA for exterior locations, 45 dBA for interior locations), and Project-related impacts are evaluated as less than significant.

Off-Site Noise Effects from Project Traffic Volumes

The analysis in this section is based in part on a Project-specific traffic impact analysis which assesses the near- and long-term traffic volumes on surrounding roadways (both with and without the proposed Project). A copy of the Project's traffic study is included in the Technical Appendices to this SEIR under Appendix G.

For each roadway segment identified in the Project's traffic study, the worst-case average daily traffic (ADT) volume and observed/predicted speeds were evaluated to identify the corresponding reference noise level 100 feet from the centerline of each roadway. This assessment includes a comparison of the projected noise volumes that would occur both with and without Project-generated traffic. The results on this analysis are provided in detail in the Project-specific Preliminary Noise Study, provided as Appendix G to this SEIR, and are summarized below.

As depicted in Table 2.4-2, it was determined that under existing conditions all study area roadway segments would generate noise levels in excess of 60 dBA. Existing traffic noise conditions along study area segments range from 65.0 dBA to 82.1 dBA at a distance of 100 feet from the roadway centerline. The Project's ultimate contribution to off-site noise levels due to Project-related traffic volumes is summarized in Table 2.4-4, *Existing Plus Project Conditions Noise Contours*. Upon ultimate development of the Project site, noise conditions along study area segments would range from 68.7 dBA to 83.3 dBA at a distance of 100 feet from the roadway centerline. As depicted in Table 2.4-5, *Existing Versus Existing Plus Project Year Project Contributions,* noise increases due to the addition of Project traffic would range from 0.2 dBA to 8.2 dBA. Although all study area roadway segments would produce noise levels in excess of 60 dBA, a significant impact would occur only if there are existing or proposed NSLUs located along these roadway segments. As depicted on Figure 2.4-1, *Nearby Residential Receptors,* the only roadway segment with existing or proposed NSLUs within the Project's study area is along Otay Mesa Road between Sanyo Avenue and Enrico Fermi Drive. With implementation of the proposed Project, the projected noise level along this roadway segment would be 74.2 dBA CNEL at a distance of 100 feet from the roadway centerline, which would exceed the County's 60 dBA CNEL standard for residential uses.

The usable side yard area for each residence was estimated to be located 100 feet from the centerline of Otay Mesa Road. At such a distance, projected noise levels would be 14.2 dBA over the County's threshold of significance for NSLUs. Preliminary acoustical calculations were performed by the

Project's noise consultant to evaluate the effectiveness of a noise barrier to mitigate future traffic noise impacts at the side yards of these three residences. The resulting calculations demonstrate that the required 14.2 dBA attenuation could be achieved by constructing a 14-foot high noise wall along the roadway right-of-way. Return walls along the side yards perpendicular to driveways also would be required. However, a 14-foot high noise wall would exceed the County's maximum height for such barriers, as specified in Section 6708 of the County's Zoning Ordinance. The Project's noise consultant also evaluated a typical 8-foot high wall, which would exceed the height requirements of Section 6708a of the County's Zoning Ordinance, but would be more likely to meet the standards for exceptions or administrative exceptions set forth in Sections 6708h and 6708i of the County's zoning ordinance. Construction of an 8-foot wall in the same configuration as described above for the 14-foot wall would result in a reduction of noise levels by approximately 11 dBA, which would reduce noise levels to 61.2 dBA. Therefore, reduction of projected noise impacts at these existing residences either would require the construction of a 14-foot wall, which is not feasible given the County Zoning Ordinance's restriction against walls of such a height, or would require the construction of a maximum 8-foot high wall that would not attenuate noise levels below the County's 60 dBA CNEL standard.

The Final EIR for the EOMSP previously identified significant and unmitigable impacts to residential areas from industrial uses and roadways. Mitigation measures were identified to reduce these impacts to the maximum feasible extent (refer to SEIR Section 2.4.5.1); however, mitigation would be unable to reduce impacts to less than significant levels. Implementation of the proposed Project would not result in noise impacts greater than what was previously evaluated in the EOMSP Final EIR, and the analysis provided above supports the conclusion in the EOMSP Final EIR that mitigation is not available to reduce vehicular-related noise impacts to below the County's threshold of 60 dBA CNEL. Therefore, transportation-related noise impacts would be similar to those identified in the EOMSP Final EIR, and would remain significant and unmitigable.

2.4.2.3 Project Generated Airborne Noise

Guidelines for the Determination of Significance

The Project would have a significant adverse effect on noise if any of the following would occur as a result of a Project-related component:

(2) The Project will generate airborne noise which, together with noise from all other sources, will be in excess of either of the following:

A. Non-construction noise: The limit specified in San Diego County Code Section 36.404, Sound Level Limits, at or beyond the property line. The limits provided by Section 36.404 are summarized below in Table 2.4-3.

B. Construction Noise: Noise generated by construction activities related to the Project will exceed the standards listed in San Diego County Code Section 36.410, Construction Equipment.

Threshold 2 addresses the Project's consistency with the San Diego County Code of Regulatory Ordinances, Title 3, Division 6, Chapter 4 Noise Abatement and Control, Sections 36.404, *Sound Level Limits*, and 36.410, *Construction Equipment*.

Analysis

Short-Term Construction Noise Emission Levels

Construction activities would occur between the hours of 7 a.m. and 4 p.m., Monday through Friday, in accordance with San Diego County Noise Ordinance (County Code of Regulatory Ordinances, Title 3, Division 6, Chapter 4) and County operational requirements. For temporary construction activities, the County Noise Ordinance specifies that construction noise may not exceed an average sound level of 75 decibels when measured at the boundary abutting any parcel upon which a legal dwelling unit is located.

The Project site would be mass graded in one phase, prior to construction of any structure on-site. A total of four scrapers, two compactors, two water trucks, two graders, and two dozers would be operated on-site during mass grading activities. The construction equipment noise levels used in the Project-specific Preliminary Noise Study are shown in Table 2.4-6, *Construction Equipment Noise Levels*. The equipment is anticipated to be dispersed throughout the Project site, with some equipment operating at or near the property line while the rest of the equipment may be located as far as 2,000 feet from the same property line. This would result in an acoustical center for the grading operation at approximately 1,000 feet to the nearest property line. As shown in Table 2.4-7, *Predicted Construction Noise Levels*, if all the equipment was operating in the same location, which is not physically possible, at a distance as close as 160 feet from the nearest property line, the point source noise attenuation from construction activities is 10.1 dBA. This would result in an anticipated worst-case combined noise level of 74.9 dBA at the property line. Given this and the spatial separation of the equipment, the noise levels would comply with the County of San Diego's 75 dBA standard at all property lines, and a significant impact would therefore not occur.

Temporary construction activities adjacent to undisturbed areas that support sensitive wildlife species would be subject to a more stringent noise threshold than general construction activities. Indirect construction-related noise impacts that would occur with implementation of the Project were previously evaluated in SEIR Sections 2.2.2.2 and 2.2.2.3 under the sub-headings "Sensitive Wildlife Species Impacts" and "Riparian Habitat or Sensitive Natural Community" (respectively), and mitigation is provided in SEIR Section 2.2.5. Following implementation of the required mitigation, temporary Project noise impacts would be less than significant.

Long-Term Operational Noise Emission Levels

Each lot on the Project site is designed to be ultimately developed with industrial land uses. Typical sources of noise associated with industrial development may include: rooftop mechanical ventilation units, truck traffic, truck loading/unloading, trash compactors, forklifts, and generators. Although, details about the specific land uses and configuration of on-site structures are not currently known, the Project would be governed under Section 6310(d) of the San Diego County Zoning Ordinance (herein, "Noise Ordinance"), which would correspond to an exterior noise limit of 75 dBA Leq at the property line. As such, the analysis contained herein assumes that noise levels at the property line would be equal to 75 dBA Leq. Since it is presumed that noise levels at the property line would not exceed 75 dBA, a significant impact due to a conflict with the Noise Ordinance would not occur. However, there is a potential that operational noise levels could result in significant impacts associated with the proposed sewer lift station, the proximity of biological open space to proposed industrial lots, and NSLUs located near the site across the international border in Mexico. Each of these potential noise impacts is discussed in further detail below.

As described in SEIR Section 1.2.1.1, *Tentative Map (TM5505),* the Project would construct a sewer lift station in the southwestern corner of the site on Lot 38. The sewer lift station would consist of two underground 40 horsepower pumps that would be encased in a concrete vault. According to the Project's Noise Impact Analysis, the lift station is projected to generate a noise level of approximately 45 dBA at a distance of 15 feet, which would not exceed County requirements and would not result in a nuisance to industrial land uses that would ultimately be developed in the vicinity of the sewer lift station. As such, long-term operation of the sewer lift station would not result in significant noise impacts to proposed on-site land uses, nor would it expose existing or planned NSLUs in the vicinity of the site to noise levels in excess of the County's standards.

The southeastern portion of the Project site would be preserved as biological open space. In addition, off-site areas adjacent to and east of the Project site's southeastern corner would be preserved as biological open space by the Otay Crossings Commerce Park. Figure 2.4-2, *On- and Off-Site Biological Open Space,* depicts the on- and off-site biological open space areas in relation to the proposed Project site. Both the on-site and off-site biological open space areas have the potential to support sensitive animal species that may be adversely affected by on-site operational noise (*i.e.*, noise levels in excess of 60 dBA Leq). For purposes of analysis within this SEIR, it was assumed that a significant impact would occur if Project-related noise levels exceed, or substantially contribute to, noise levels in excess of 60 dBA at on- or off-site biological open space areas.

As previously mentioned, it is assumed that noise levels at the property line would be 75 dBA during future site operations. Due to the physical properties of sound, unmitigated noise levels generated by the Project would be reduced to 60 dBA at a distance of 280 feet. Additionally, with the simultaneous operation of multiple lots on the proposed Project site (i.e., Lots 46 & 47, or Lots 47 & 48), would produce noise levels of approximately 78 dBA, which would be reduced to 60 dBA at a distance of 395 feet from Lots 46-48. Because the ultimate physical layout and orientation of on-site structures are not reasonably foreseeable, there is the potential that noise sources could be placed closer than 395 feet to proposed on- and/or off-site biological open space areas. Accordingly, there is the potential that long-term operation of the site would expose biologically sensitive areas on- and off-site to unacceptable levels of noise (*i.e.*, noise levels in excess of 60 dBA Leq), which would result in a significant impact (**Significant Direct Impact N-1**).

The Project site varies between 150 and 330 feet north of the U.S.-Mexico border, while future on-site mixed industrial land uses would be located at a distance between approximately 330 and 490 feet north of the nearest existing land uses in Mexico. Based upon a recent aerial photograph, industrial uses occur on the Mexico side of the border southerly of the Project site. As described above, the Project would be required to comply with the Noise Ordinance and sound levels at the Project boundary are projected to be 75 dBA. As discussed above in SEIR Section 2.4.2.2, noise levels generated by the Project would be reduced to approximately 53.6 dBA at a distance of330 feet south of the site, and would be reduced further below County standards (*i.e.*, 75 dBA) as the distance from the site increased. It is also important to note that a U.S. Border Patrol Corridor, a 16-foot high fence, and a heavily traveled trucking corridor (on the Mexico side of the border) lie between the Project site and existing industrial uses in Mexico. As such, noise generated by the Project is not anticipated to exceed existing ambient levels and the Project would not result in a significant impact to existing industrial uses in Mexico.

2.4.2.4 Ground-Borne Vibration and Noise Impact Analysis

Guidelines for the Determination of Significance

The Project would have a significant adverse effect on noise if the following would occur as a result of a Project-related component:

(3) Project implementation would expose the uses listed in Table 2.4-8 and Table 2.4-9 to ground-borne vibration or noise levels equal to or in excess of the levels shown.

Threshold 3 addresses the Project's potential to expose sensitive receptors to ground-borne vibration or noise above maximum permitted levels.

Analysis

Vibration refers to groundborne noise and perceptible motion. Typical sources of groundborne vibration are construction activities (*e.g.*, blasting, pile driving, and operating heavy-duty earthmoving equipment), steel-wheeled trains, and occasional traffic on rough roads. Groundborne vibration is almost exclusively a concern inside buildings and is rarely perceived as a problem outdoors, where the motion may be discernable but without the accompanying effects (*e.g.*, shaking of a building).

Groundborne vibration and noise are generally localized to areas within 100 feet from the vibration source. Mass grading of the site may produce minor levels of groundborne vibration and noise. However, the Project site and the immediate vicinity (areas within 100 feet) are vacant; accordingly, there are no existing land uses (as listed on Table 2.4-8) or building types (as listed on Table 2.4-9) that are sensitive to groundborne vibration and noise located in the vicinity of the site. Existing development in Mexico is located beyond the range of vibration impacts, and therefore would not be exposed to minor amounts of groundborne vibration that may occur from on-site grading. Therefore, impacts from construction-related groundborne vibration and noise would be less than significant and no mitigation would be required.

Operational impacts would be exclusively limited to on-road vehicle-related vibration. Vehicles traveling on smooth, paved roadway surfaces produce little vibration. It is anticipated that the Project's roadways and the surrounding public roadway system would be properly maintained, thereby precluding any potential impacts related to vibration. Thus, vibration impacts related to long-term operation of the site would be less than significant and no mitigation would be required.

2.4.3 Cumulative Impact Analysis

2.4.3.1 Cumulative Impacts Identified by the EOMSP Final EIR

The EOMSP Final EIR (1994) concludes that "…transportation impacts will be both short- and long-term and cumulative as the area builds out, as are noise and air quality impacts." Additional analysis of the Project's potential contribution to cumulatively significant noise effects is provided below in Section 2.4.3.2.

2.4.3.2 Project-Specific Cumulative Impact Analysis

A study area was defined in order to assess the cumulative effect of the Project's impacts to noise, as depicted on Figure 2.4-3, *Cumulative Study Area - Noise*. During near-term construction activities,

any off-site grading operations occurring concurrent with Project construction activities and located within 160-feet of the proposed Project site have the potential to result in combined noise level increases of 3 decibels and exceed the County's 75 dBA threshold. Therefore, for purposes of near-term construction activities, the cumulative study area for noise encompasses all areas within 160 feet of the proposed Project site. For long-term operation, any industrial operations located within 395-feet of the proposed Project site have the potential to result in a combined noise level in excess of 60 dBA Leq, which could result in adverse impacts to on- and off-site biological open space areas. Therefore, for purposes of long-term operation, the cumulative study area for noise encompasses all areas within 395 feet of the proposed Project site. For long-term vehicular related noise emissions, a cumulative study area was defined based on the intersections and roadway segments located within the study area identified for the Project's traffic study. The cumulative study area for long-term vehicular noise is appropriate because the Project's traffic study encompasses all roadway segments and intersections anticipated to receive substantial amounts of traffic from the proposed Project. Therefore, roadway segments and intersections located outside of the traffic study area would not be significantly affected by Project-related vehicular noise.

Research was conducted which resulted in a list of past, present, and reasonably foreseeable projects within the Project vicinity, that might contribute to noise-related impacts. EIR Section 1.7 provides a summary of all the projects that were considered along with their identified impacts to each of the environmental issue areas addressed by this EIR. For purposes of near-term construction-related cumulative impacts, only three projects are located within 160 feet of the proposed Project site and have the potential to contribute to cumulatively considerable construction noise levels, as depicted on Figure 2.4-3. For purposes of evaluating long-term operational-related cumulative impacts, only three projects are located within 160 feet of the proposed Project and have the potential to contribute to cumulatively considerable long-term noise levels, as depicted on Figure 2.4-3. For long-term vehicular-related noise emissions, the study area encompasses all 37 Projects identified in EIR Table 1-7, *Cumulative Projects CEQA Summary*, as this area corresponds to the study area used in the Project's traffic study. Of the 37 projects in the long-term cumulative study area for noise, a total of six projects have the potential to result in significant vehicular-related noise impacts. Of these six projects, vehicular-related impacts were mitigated to a level below significance for five of these projects, while vehicular-related noise impacts from the Otay Crossings Commerce Park are evaluated as significant and unmitigable (due to traffic-related noise impacts to the three off-site NSLUs along Otay Mesa Road). It should be noted that even though individual projects within the study area were determined to be less than significant or mitigable to a level below significant, traffic associated with these projects, when combined with Project traffic, still have the potential to result in a cumulatively considerable impact.

For near-term construction activities, and as shown on Figure 2.4-3, a total of three proposed projects are located within 160 feet of the Project site (Otay Crossings Commerce Park, Rapid Transfer Express, and SR-11/Otay Mesa East Port of Entry). If similar grading operations were to occur simultaneously on these adjacent projects at a distance of 160-feet from the Project's boundary, construction-related noise would be doubled at the shared property line. From a noise standpoint, the two separate operations would be considered overlapping and would act as a single noise generator. This would result in a noise level increase of 3 decibels and would exceed the County's threshold of 75 dBA. Therefore, if grading activities were to occur on adjacent project sites within 160 feet of the proposed Project site and simultaneous with Project grading activities, a near-term cumulatively significant impact to noise would occur (**Significant Cumulative Impact N-2**).

For long-term operation, a total of three proposed projects are located within 395 feet of the Project site (Otay Crossings Commerce Park, Rapid Transfer Express, and SR-11/Otay Mesa East Port of Entry). Of these three projects, only two projects (Otay Crossings Commerce Park and SR-11/Otay Mesa East Port of Entry) are located within 395 feet of the proposed biological open space areas on the southeastern portion of the Project site and the biological open space area that would be preserved by the Otay Crossings Project located east of and adjacent to the Project site. Therefore, only two projects in the cumulative study area have the potential to contribute cumulative noise emissions biological open space areas. If land uses similar to those proposed by the Project were to operate simultaneously within 395 feet of on- and off-site biological open space areas, operational noise would exceed 60 dBA Leq. Noise levels in excess of 60 dBA Leq would be unacceptable for sensitive biological areas; therefore, if simultaneous operational activities were to occur on the Project site and an adjacent project site within 395 feet of biological open space areas, a long-term cumulatively significant impact to noise would occur (**Significant Direct and Cumulative Impact N-1**).

For long-term vehicular-related noise, Table 2.4-10, *Existing Versus Existing Plus Cumulative Plus Project With SR-905 Project Contributions,* presents the existing year noise levels for study area roadway segments and compares those values to the cumulative year with and without the Project. As shown, the roadway noise levels are projected to change from -3.5 dBA CNEL to +8.0 dBA CNEL with the development of the proposed Project and the addition of traffic from cumulative developments.

Table 2.4-11, *Existing Plus Cumulative Versus Existing Plus Cumulative Plus Project With SR-905 Project Contributions,* presents a comparison of the cumulative year with and without the proposed Project noise levels for all roadway segments having a 3.0 dBA CNEL or greater increase, as identified in Table 2.4-10. Table 2.4-11 therefore indicates the Project-related contributions in the cumulative year.

Implementation of the proposed Project would contribute to an increase in excess of 3.0 dBA CNEL on one segment of Airway Road, Enrico Fermi Drive, Sanyo Avenue, two segments of Siempre Viva Road, and four segments of Otay Mesa Road, as shown in Table 2.4-5. A cumulative increase of more than 3.0 dBA CNEL is projected on segments of SR-905, Otay Mesa Road, Airway Road, Sanyo Avenue, Enrico Fermi Drive, and three segments of Siempre Viva Road, as shown in Table 2.4-10. The Project would result in a cumulatively considerable noise increase (i.e., 1.0 dBA CNEL or more) on the three segments of Siempre Viva Road and one segment of Enrico Fermi Drive, as shown in Table 2.4-11.

As noted previously, the segment of Otay Mesa Road between Sanyo Avenue and Enrico Fermi Drive is the only roadway segment within the Project's study area that contains NSLUs. Three existing residential units are located along this segment of Otay Mesa Road. As shown previously in Table 2.4-5, existing with Project noise levels would be approximately 74.2 dBA CNEL at these three residences, and the Project's contribution to the existing noise environment at these residences would be 3.9 dBA CNEL. However, under cumulative conditions (i.e., Year 2020), the future noise conditions at the three residences are anticipated to be lower than that identified for direct conditions because the traffic volumes reflected in the Project's traffic study assume that only 13% of the Project would be built-out by year 2020 (refer to SEIR Section 2.7.3.2 for a discussion of the Year 2020 assumptions utilized in the traffic study's cumulative impact analysis). As shown in Table 2.4-10, based on these assumptions and with buildout of the SR-905 freeway facility, noise levels on the

roadway segment of Otay Mesa Road between Sanyo Avenue and Enrico Fermi Drive are projected to decrease by 2.2 dBA at a distance of 100 feet (which corresponds to the location assumed for the usable side yard for these residences) under Year 2020 conditions. Accordingly, the Project's cumulative contribution to noise impacts to existing NSLUs is evaluated as less than significant.

2.4.4 Significance of Impacts Prior to Mitigation

Significant Direct and Cumulative Impact N-1: Long-term operation of the Project site has the potential to expose biologically sensitive areas on- and off-site to unacceptable levels of noise (*i.e.*, noise levels in excess of 60 dBA Leq) on both a direct and cumulative basis.

Significant Cumulative Impact N-2: If grading activities were to occur on adjacent project sites within 160 feet of the proposed Project site and simultaneous with Project grading activities, the resulting combined noise level would increase by 3 decibels and would exceed the County's threshold of 75 dBA. This condition would represent a near-term cumulatively significant impact to noise.

2.4.5 Mitigation

2.4.5.1 Mitigation Measures from the EOMSP Final EIR

Mitigation measures were identified by the EOMSP Final EIR (1994) to address impacts to noise resulting from construction and long-term operation of the uses identified by the EOMSP, and include the following:

8A. Noise sensitive land uses, including existing and proposed residences and all California gnatcatcher habitat, located within the estimated 60 CNEL noise contour shall have site specific noise studies prepared prior to approval of discretionary permits. Siting of industrial and commercial uses shall be such that adequate setbacks are created to minimize off-site noise impacts to sensitive receptors.

8B. Residential development shall be avoided in the areas where the projected CNEL noise contour for Brown Field exceeds 60 dB.

8C. All construction operations shall comply with the San Diego County Construction Noise Ordinance (Section 36.410). All construction operations scheduled to occur within 1,500 feet of California gnatcatcher habitat shall prepare a project specific noise mitigation and monitoring program to demonstrate compliance with established noise standards.

8D. Project specific noise analyses shall be required in the hillside residential district prior to approval of projects in this area to assure noise compatibility with adjacent projects, specifically the offroad vehicle park and the San Diego International Raceway.

EOMSP EIR Mitigation Measure 8A is intended to reduce operational noise impacts to below levels of significance, and would be enforced in conjunction with Mitigation Measure M-N-1 (refer to SEIR Section 2.4.5.2). EOMSP EIR Mitigation Measures 8B and 8D are not applicable to the proposed Project, as these mitigation requirements would apply to new residential development. Mitigation Measure 8C has been fulfilled by the preparation of a Project-specific noise impact analysis, which

demonstrates that, with mitigation, direct and cumulative noise impacts during construction would comply with the San Diego County Construction Noise Ordinance.

2.4.5.2 Project-Specific Mitigation

M-N-1 **NOISE PROTECTION EASEMENT: [DPW] [Final Map]**

Intent: In order to preclude potential noise impacts to on- and off-site biological open space areas during long-term operation of the Project, a noise protection easement shall be placed on a portion of the Project site. **Description of Requirement:** A noise protection easement shall be granted to the County of San Diego over the entire area of Lots 43, 45 through 55, and 57 through 59 on Tentative Map 5505. This easement is for the mitigation of anticipated future noise levels that would occur on these lots during long-term operation. The easement shall require the following:

Prior to the approval of any Site Plan for any development proposal within the Noise Protection Easement, the applicant shall:

1. *Complete to the satisfaction of the Director of the Department of Planning and Land Use, an acoustical analysis performed by a County-approved acoustical engineer, demonstrating that Project noise would not substantially contribute to future exterior noise levels at the on- and/or off-site biological open space areas in excess of 60 dBA Leq. If ambient noise levels in the biological open space exceed 60 dBA Leq prior to the development of Lots 47-49, the analysis shall demonstrate that the Project-related contributions toward cumulative noise levels in the biological open space would be less than or equal to a 0.0 net dBA Leq increase above ambient conditions that exist at the time the study was prepared.*
2. *Incorporate to the satisfaction of the Director of the Department of Planning and Land Use all of the recommendations or mitigation measures of the acoustical analysis into the Project design and building plans.*

Documentation: The Department of Public Works shall ensure that the Final Map includes a note which documents the requirements of the Noise Protection Easement. The limits of the noise protection easement shall also be delineated on the Final Map. **Timing:** Prior to recordation of the Final Map for Unit 3 that includes Lots 46, 47, and 48 of Tentative Map 5505. **Monitoring:** The Department of Public Works shall review the Final Map for Unit 3 for conformance with this mitigation measure.

M-N-2 **GRADING PLAN: [DPW] [Grading Permit]**

Intent: To preclude potential noise impacts during construction, noise reduction strategies shall be incorporated into Project construction activities. **Description of Requirement:** The Department of Public Works shall determine the likelihood of Project grading operations occurring simultaneously with grading operations for adjacent properties. If it is determined that non-Project related grading operations could occur within 160 feet of the proposed Project site and simultaneous with Project grading activities, then the following note shall be included on the grading permit:

"*The Permit Compliance Engineer shall ensure that on-site grading operations do not occur within 225 feet of any property line that abuts properties where active*

grading activities are occurring. On-site grading activities adjacent to the property line may occur if grading activities for adjacent properties are occurring at a minimum distance of 225 from the shared property line. The Permit Compliance Engineer (as defined in Section 87.420 of the County Grading Ordinance) shall demonstrate compliance with this requirement in the regular reports required pursuant to Section 87.420(a) of the County's Grading Ordinance. The regular reports shall identify any days where grading activities were restricted on-site or on adjacent properties in order to ensure a minimum distance of 225 feet between grading activities."

Documentation: The applicant shall prepare the Grading Plan pursuant to this mitigation measure. The Grading Plan shall be submitted to the Department of Public Works, along with payment of all applicable review fees and deposits. **Timing:** Prior to the issuance of grading permits for Lots 1-59 of TM 5505. **Monitoring:** The Department of Public Works shall review the Grading Plan for conformance with this mitigation measure. Upon approval of each Grading Plan, a decision of approval and a grading permit shall be issued to the applicant.

2.4.6 Conclusion

The following provides a summary of the significance of the impact identified above under Section 2.4.4 after incorporation of the mitigation measures identified under Section 2.4.5.

Significant Direct and Cumulative Impact N-1: With incorporation of Mitigation Measure M-N-1, future development of the Project site would require the preparation of site-specific noise analyses to determine if long-term operation of the site would exceed permitted noise levels at the Project site's boundary with biological open space areas. If it is determined that long-term operation of the Project would result in unacceptable noise levels at or beyond the boundary with biological open space areas, noise attenuation measures would be incorporated into future development to reduce noise impacts. Implementation of Mitigation Measure M-N-1 would reduce noise impacts related to long-term operation of the site to less than significant levels.

Significant Cumulative Impact N-2: With implementation of Mitigation Measure M-N-2, cumulative noise levels from Project grading activities and grading activities on adjacent properties would not exceed the County's 75 dBA threshold of significance for construction-related noise. Therefore, with incorporation of the required mitigation, near-term construction-related noise impacts would be reduced to less than significant levels.

Table 2.4-2 EXISTING CONDITIONS NOISE CONTOURS

ROAD	SEGMENT	AVERAGE DAILY TRAFFIC[1]	CNEL AT 100 FEET (dBA)	DISTANCE TO CONTOUR (FEET)			
				70 dBA CNEL	65 dBA CNEL	60 dBA CNEL	55 dBA CNEL
Interim SR-905	Heritage Rd. To Cactus Rd.	64.3	81.7	1,628	5,148	16,281	51,485
Interim SR-905	Cactus Rd. to Britannia Blvd.	71.1	82.1	1,800	5,691	17,998	56,914
Interim SR-905	Britannia Blvd. to La Media Rd.	59.0	81.3	1,494	4,724	14,939	47,241
Interim SR-905	La Media Rd. to Piper Ranch Rd.	44.5	79.3	939	2,970	9,393	29,704
Interim SR-905	Piper Ranch Rd. to SR-125	43.1	80.0	1,092	3,452	10,915	34,518
Otay Mesa Road	SR-125 to Interim SR-905 Connector	16.7	75.1	352	1,113	3,520	11,132
Otay Mesa Road	Interim SR-905 Connector to Harvest Rd.	9.7	72.7	205	650	2,054	6,497
Otay Mesa Road	Harvest Rd. to Sanyo Ave.	8.2	71.9	169	535	1,692	5,351
Otay Mesa Road	Sanyo Ave. to Enrico Fermi Dr.	9.1	70.3	118	373	1,179	3,727
Airway Road	Sanyo Ave. to Paseo de La Americas	5.6	68.2	73	230	726	2,296
Airway Road	Paseo de La Americas to Michael Faraday Dr.	4.5	67.3	59	185	585	1,850
Airway Road	Michael Faraday Dr. to Enrico Fermi Dr.	2.9	65.3	38	119	377	1,191
Siempre Viva Road	SR-905 to Paseo de Las Americas	26.7	77.9	675	2,134	6,749	21,341
Siempre Viva Road	Paseo de Las Americas to Michael Faraday Dr.	9.9	71.7	162	511	1,616	5,112
Siempre Viva Road	Michael Faraday Dr. to Enrico Fermi Dr.	6.4	69.8	105	333	1,053	3,331
La Media Road	Interim SR-905 (Otay Mesa Rd.) to Airway Rd.	15.2	73.5	249	787	2,489	7,872
SR-125	North of Otay Mesa Rd.	30.0	78.2	728	2,301	7,277	23,012
Existing SR-905	Airway Rd. to Siempre Viva Rd.	37.8	78.5	778	2,461	7,783	24,612
Existing SR-905	South of Siempre Viva Rd.	28.0	77.9	679	2,148	6,792	21,478
Sanyo Avenue	Otay Mesa Rd. to Airway Rd.	2.7	66.0	44	138	436	1,379
Enrico Fermi Drive	Otay Mesa Rd. to Airway Rd.	2.7	65.0	35	109	346	1,094
Enrico Fermi Drive	Airway Rd. to Siempre Viva Rd.	7.1	71.2	146	463	1,463	4,627

1. Based on Traffic Impact Analysis prepared by Darnell and Associates, April 2010
Source: Urban Crossroads (July 13, 2010)

Table 2.4-3 SAN DIEGO COUNTY CODE SECTION 36.404 SOUND LEVEL LIMITS

ZONE		APPLICABLE LIMIT ONE-HOUR AVERAGE SOUND LEVEL (DECIBELS)
R-S, R-D, R-R, R-MH, A-70, A-72, S-80, S-81, S-87, S-88, S-90, S-92, R-V, and R-U Use Regulations with a density of less than 11 dwelling units per acre.	7 a.m. to 10 p.m. 10 p.m. to 7 a.m.	50 45
R-RO, R-C, R-M, C-30, S-86, R-V, R-U and V5. Use Regulations with a density of 11 or more dwelling units per acre.	7 a.m. to 10 p.m. 10 p.m. to 7 a.m.	55 50
S-94, V4, and all other commercial zones.	7 a.m. to 10 p.m. 10 p.m. to 7 a.m.	60 55
V1, V2 V1, V2 V1 V2	7 a.m. to 7 p.m. 7 p.m. to 10 p.m. 10 p.m. to 7 a.m. 10 p.m. to 7 a.m.	60 55 55 50
V3	7 a.m. to 10 p.m. 10 p.m. to 7 a.m.	70 65
M-50, M-52, M-54	Anytime	70
S-82, M-58, and all other industrial zones.	Anytime	75

Table 2.4-4 EXISTING PLUS PROJECT CONDITIONS NOISE CONTOURS

ROAD	SEGMENT	AVERAGE DAILY TRAFFIC[1]	CNEL AT 100 FEET (dBA)	DISTANCE TO CONTOUR (FEET)			
				70 dBA CNEL	65 dBA CNEL	60 dBA CNEL	55 dBA CNEL
Interim SR-905	Heritage Rd. To Cactus Rd.	85.4	82.9	2,162	6,838	21,623	68,377
Interim SR-905	Cactus Rd. to Britannia Blvd.	92.5	83.3	2,342	7,407	23,424	74,074
Interim SR-905	Britannia Blvd. to La Media Rd.	81.1	82.7	2,054	6,494	20,535	64,937
Interim SR-905	La Media Rd. to Piper Ranch Rd.	67.6	81.1	1,427	4,512	14,268	45,119
Interim SR-905	Piper Ranch Rd. to SR-125	66.5	81.9	1,685	5,329	16,851	53,286
Otay Mesa Road	SR-125 to Interim SR-905 Connector	40.1	78.9	847	2,677	8,466	26,771
Otay Mesa Road	Interim SR-905 Connector to Harvest Rd.	26.5	77.1	559	1,767	5,587	17,667
Otay Mesa Road	Harvest Rd. to Sanyo Ave.	25.0	76.7	514	1,625	5,138	16,246
Otay Mesa Road	Sanyo Ave. to Enrico Fermi Dr.	22.5	74.2	291	919	2,907	9,194
Airway Road	Sanyo Ave. to Paseo de La Americas	9.0	70.2	116	366	1,157	3,658
Airway Road	Paseo de La Americas to Michael Faraday Dr.	7.9	69.7	102	322	1,017	3,217
Airway Road	Michael Faraday Dr. to Enrico Fermi Dr.	6.3	68.7	81	256	809	2,558
Siempre Viva Road	SR-905 to Paseo de Las Americas	41.7	79.8	1,056	3,341	10,564	33,407
Siempre Viva Road	Paseo de Las Americas to Michael Faraday Dr.	25.0	75.7	408	1,290	4,080	12,903
Siempre Viva Road	Michael Faraday Dr. to Enrico Fermi Dr.	21.5	75.0	352	1,112	3,517	11,123
La Media Road	Interim SR-905 (Otay Mesa Rd.) to Airway Rd.	15.9	73.7	260	822	2,599	8,219
SR-125	North of Otay Mesa Rd.	36.7	79.1	890	2,815	8,902	28,149
Existing SR-905	Airway Rd. to Siempre Viva Rd.	51.2	79.8	1,054	3,333	10,539	33,328
Existing SR-905	South of Siempre Viva Rd.	29.7	78.2	720	2,276	7,198	22,762
Sanyo Avenue	Otay Mesa Rd. to Airway Rd.	6.0	69.5	98	311	984	3,110
Enrico Fermi Drive	Otay Mesa Rd. to Airway Rd.	17.8	73.2	229	724	2,291	7,244
Enrico Fermi Drive	Airway Rd. to Siempre Viva Rd.	8.8	72.2	181	572	1,808	5,716

1. Based on Traffic Impact Analysis prepared by Darnell and Associates, April 2010

Source: Urban Crossroads (July 13, 2010)

Table 2.4-5 EXISTING VERSUS EXISTING PLUS PROJECT YEAR PROJECT CONTRIBUTIONS

ROAD	SEGMENT	DISTANCE TO 60 dBA CNEL CONTOUR (FEET)			CNEL AT 100 FEET (dBA)		
		NO PROJECT	WITH PROJECT	PROJECT INCREASE	NO PROJECT	WITH PROJECT	PROJECT INCREASE
Interim SR-905	Heritage Rd. To Cactus Rd.	16,281	21,623	5,342	81.7	82.9	1.2
Interim SR-905	Cactus Rd. to Britannia Blvd.	17,998	23,424	5,426	82.1	83.3	1.1
Interim SR-905	Britannia Blvd. to La Media Rd.	14,939	20,535	5,596	81.3	82.7	1.4
Interim SR-905	La Media Rd. to Piper Ranch Rd.	9,393	14,268	4,875	79.3	81.1	1.8
Interim SR-905	Piper Ranch Rd. to SR-125	10,915	16,851	5,936	80.0	81.9	1.9
Otay Mesa Road	SR-125 to Interim SR-905 Connector	3,520	8,466	4,946	75.1	78.9	**3.8**
Otay Mesa Road	Interim SR-905 Connector to Harvest Rd.	2,054	5,587	3,533	72.7	77.1	**4.3**
Otay Mesa Road	Harvest Rd. to Sanyo Ave.	1,692	5,138	3,446	71.9	76.7	**4.8**
Otay Mesa Road	Sanyo Ave. to Enrico Fermi Dr.	1,179	2,907	1,728	70.3	74.2	**3.9**
Airway Road	Sanyo Ave. to Paseo de La Americas	726	1,157	431	68.2	70.2	2.0
Airway Road	Paseo de La Americas to Michael Faraday Dr.	585	1,017	432	67.3	69.7	2.4
Airway Road	Michael Faraday Dr. to Enrico Fermi Dr.	377	809	432	65.3	68.7	**3.3**
Siempre Viva Road	SR-905 to Paseo de Las Americas	6,749	10,564	3,815	77.9	79.8	1.9
Siempre Viva Road	Paseo de Las Americas to Michael Faraday Dr.	1,616	4,080	2,464	71.7	75.7	**4.0**
Siempre Viva Road	Michael Faraday Dr. to Enrico Fermi Dr.	1,053	3,517	2,464	69.8	75.0	**5.2**
La Media Road	Interim SR-905 (Otay Mesa Rd.) to Airway Rd.	2,489	2,599	110	73.5	73.7	0.2
SR-125	North of Otay Mesa Rd.	7,277	8,902	1,625	78.2	79.1	0.9
Existing SR-905	Airway Rd. to Siempre Viva Rd.	7,783	10,539	2,756	78.5	79.8	1.3
Existing SR-905	South of Siempre Viva Rd.	6,792	7,198	406	77.9	78.2	0.3
Sanyo Avenue	Otay Mesa Rd. to Airway Rd.	436	984	548	66.0	69.5	**3.5**
Enrico Fermi Drive	Otay Mesa Rd. to Airway Rd.	346	2,291	1,945	65.0	73.2	**8.2**
Enrico Fermi Drive	Airway Rd. to Siempre Viva Rd.	1,463	1,808	345	71.2	72.2	0.9

*Note: All values in **bold** correspond to Project-related noise increases in excess of 3 dBA.*
Source: Urban Crossroads (July 13, 2010)

Table 2.4-6 CONSTRUCTION EQUIPMENT NOISE LEVELS

EQUIPMENT TYPE	SOURCE LEVEL AT 50 FEET[1]
Scraper	75 dBA
Compactor	75 dBA
Water Truck	70 dBA
Motor Grader	70 dBA
Loader	70 dBA
Dozer	75 dBA

[1]Reference Levels provided by EPA, 1971
Source: Urban Crossroads (July 13, 2010)

Table 2.4-7 PREDICTED CONSTRUCTION NOISE LEVELS

EQUIPMENT TYPE	QUANTITY	TIME OF OPERATION (HOURS)	SOURCE LEVEL AT 50 FEET (dBA) [1]	CUMULATIVE LEVEL AT 50 FEET (dBA)
Scraper	4	8	75	81.0
Compactor	2	8	75	78.0
Water Truck	2	8	70	73.0
Motor Grader	2	8	70	73.0
Loader	2	8	70	73.0
Dozer	2	8	75	78.0
		CUMULATIVE LEVELS AT 50 FEET (dBA)		85.0
		DISTANCE TO PROPERTY LINE		160
		NOISE REDUCTION DUE TO DISTANCE		-10.1
		PROPERTY LINE NOISE LEVEL		**74.9**

[1]Reference Levels provided by EPA, 1971
Source: Urban Crossroads (July 13, 2010)

Table 2.4-8 GUIDELINES FOR DETERMINING THE SIGNIFICANCE OF GROUND-BORNE VIBRATION AND NOISE IMPACTS

Land Use Category	Ground-Borne Vibration Impact Levels (inches/sec rms)		Ground-Borne Noise Impact Levels (dB re 20 micro Pascals)	
	Frequent Events[1]	Occasional or Infrequent Events[2]	Frequent Events[1]	Occasional or Infrequent Events[2]
Category 1: Buildings where low ambient vibration is essential for interior operations. (research & manufacturing facilities with special vibration constraints)	0.0018 [3]	0.0018 [3]	Not applicable[5]	Not applicable[5]
Category 2: Residences and buildings where people normally sleep. (hotels, hospitals, residences, & other sleeping facilities)	0.0040	0.010	35 dBA	43 dBA
Category 3: Institutional land uses with primarily daytime use. (schools, churches, libraries, other institutions, & quiet offices)	0.0056	0.014	40 dBA	48 dBA

Source: U.S Department of Transportation, Federal Transit Administration, "Transit Noise and Vibration Impact Assessment," May 2006.

Notes for Table 2.4-8:

1. "Frequent Events" is defined as more than 70 vibration events per day. Most rapid transit projects fall into this category.
2. "Occasional or Infrequent Events" are defined as fewer than 70 vibration events per day. This combined category includes most commuter rail systems.
3. This criterion limit is based on levels that are acceptable for most moderately sensitive equipment such as optical microscopes. Vibration sensitive manufacturing or research will require detailed evaluation to define acceptable vibration levels. Ensuring lower vibration levels in a building often requires special design of the HVAC systems and stiffened floors.
4. Vibration-sensitive equipment is not sensitive to ground-borne noise.
5. There are some buildings, such as concert halls, TV and recording studios, and theaters, that can be very sensitive to vibration and noise but do not fit into any of the three categories. Table 2.4-8 gives criteria for acceptable levels of ground-borne vibration and noise for these various types of special uses.
6. For Categories 2 and 3 with occupied facilities, isolated events such as blasting are significant when the peak particle velocity (PPV) exceeds one inch per second. Non-transportation vibration sources such as impact pile drivers or hydraulic breakers are significant when their PPV exceeds 0.1 inch per second. More specific criteria for structures and potential annoyance were developed by Caltrans (2004) and will be used to evaluate these continuous or transient sources in San Diego County.

Table 2.4-9 GUIDELINE FOR DETERMINING THE SIGNIFICANCE OF GROUND-BORNE VIBRATION AND NOISE IMPACTS FOR SPECIAL BUILDINGS

Type of Building or Room	Ground-Borne Vibration Impact Levels (inches/sec rms)		Ground-Borne Noise Impact Levels (dB re 20 micro Pascals)	
	Frequent Events[1]	Occasional or Infrequent Events[2]	Frequent Events[1]	Occasional or Infrequent Events[2]
Concert Halls, TV Studios, and Recording Studios	0.0018	0.0018	25dBA	25dBA
Auditoriums	0.0040	0.010	30 dBA	38 dBA
Theaters	0.0040	0.010	35 dBA	43 dBA

Source: U.S Department of Transportation, Federal Transit Administration, "Transit Noise and Vibration Impact Assessment," May 2006.

Notes for Table 2.4-9:

1. "Frequent Events" is defined as more than 70 vibration events per day. Most rapid transit projects fall into this category.
2. "Occasional or Infrequent Events" are defined as fewer than 70 vibration events per day. This combined category includes most commuter rail systems.
3. If the building will rarely be occupied when the trains are operating, there is no need to consider impact.
4. For historic buildings and ruins, the allowable upper limit for continuous vibration to structures is identified to be 0.056 inches/second rms. Transient conditions (single-event) would be limited to approximately twice the continuous acceptable value.

Table 2.4-10 EXISTING VERSUS EXISTING PLUS CUMULATIVE PLUS PROJECT WITH SR-905 PROJECT CONTRIBUTIONS

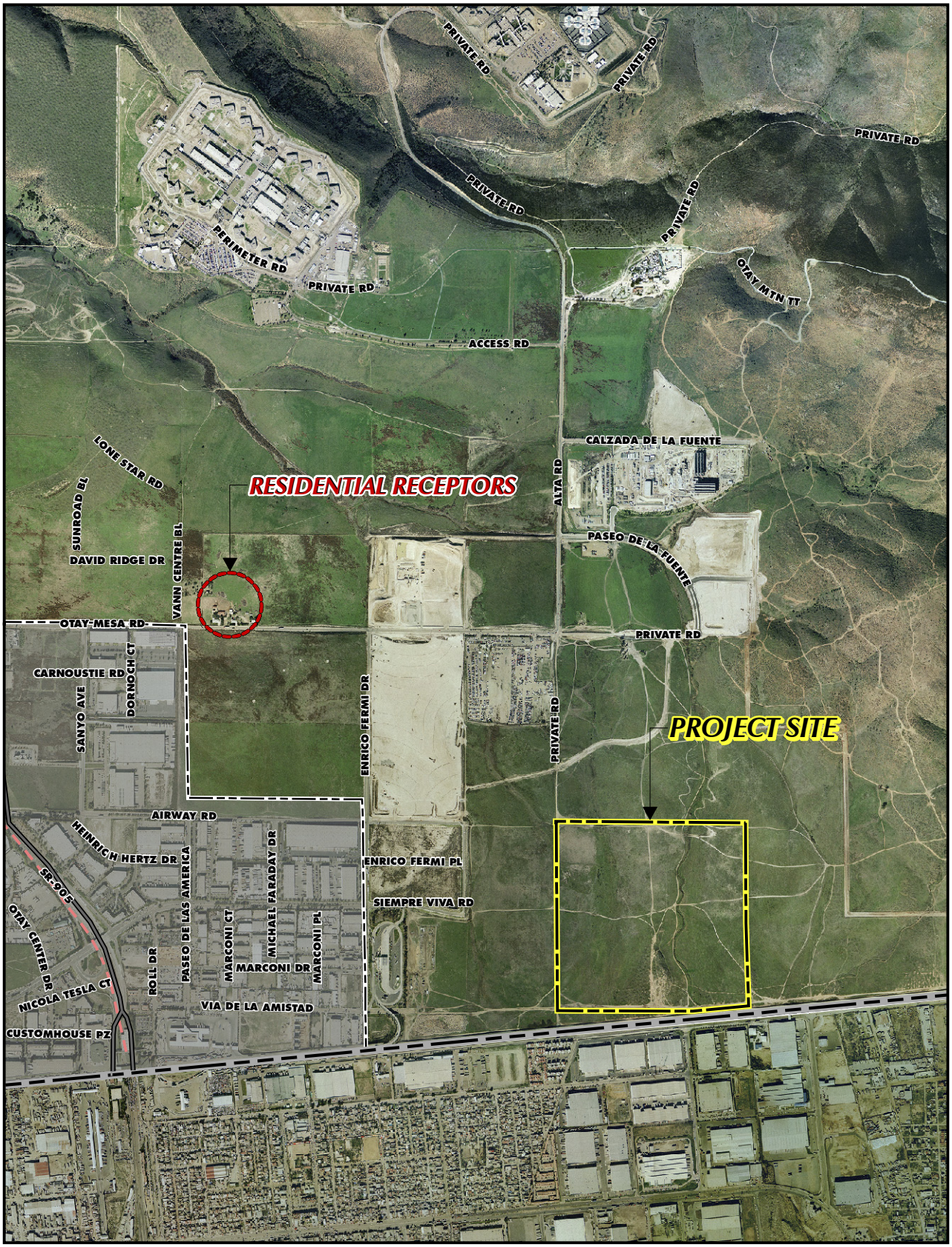
ROAD	SEGMENT	DISTANCE TO 60 dBA CNEL CONTOUR (FEET)			CNEL AT 100 FEET (dBA)		
		EX	EX + C + P	CUMULATIVE IMPACTS	EX	EX + C + P	CUMULATIVE IMPACTS
Interim SR-905	Heritage Rd. To Cactus Rd.	16,281	7,561	-8,720	81.7	78.4	-3.3
Interim SR-905	Cactus Rd. to Britannia Blvd.	17,998	8,313	-9,685	82.1	78.8	-3.4
Otay Mesa Road	SR-125 to Interim SR-905 Connector	3,520	7,034	3,514	75.1	78.1	**3.0**
Otay Mesa Road	Harvest Rd. to Sanyo Ave.	1,692	2,648	956	71.9	73.8	1.9
Otay Mesa Road	Sanyo Ave. to Enrico Fermi Dr.	1,179	707	-472	70.3	68.1	-2.2
Airway Road	Sanyo Ave. to Paseo de La Americas	726	3,299	2,573	68.2	74.8	**6.6**
Airway Road	Paseo de La Americas to Michael Faraday Dr.	585	528	-57	67.3	66.8	-0.4
Airway Road	Michael Faraday Dr. to Enrico Fermi Dr.	377	694	317	65.3	68.0	2.7
Siempre Viva Road	SR-905 to Paseo de Las Americas	6,749	13,577	6,828	77.9	80.9	**3.0**
Siempre Viva Road	Paseo de Las Americas to Michael Faraday Dr.	1,616	3,627	2,011	71.7	75.2	**3.5**
Siempre Viva Road	Michael Faraday Dr. to Enrico Fermi Dr.	1,053	3,121	2,068	69.8	74.5	**4.7**
SR-125	North of Otay Mesa Rd.	7,277	3,272	-4,005	78.2	74.7	-3.5
Existing SR-905	South of Siempre Viva Rd.	6,792	19,277	12,485	77.9	82.4	**4.5**
Sanyo Avenue	Otay Mesa Rd. to Airway Rd.	436	2,216	1,780	66.0	73.0	**7.1**
Enrico Fermi Drive	Otay Mesa Rd. to Airway Rd.	346	2,172	1,826	65.0	73.0	**8.0**

*Note: All values in **bold** correspond to cumulative noise increases in excess of 3 dBA.*
Source: Urban Crossroads (July 13, 2010)

Table 2.4-11 EXISTING PLUS CUMULATIVE VERSUS EXISTING PLUS CUMULATIVE PLUS PROJECT WITH SR-905 PROJECT CONTRIBUTIONS

ROAD	SEGMENT	DISTANCE TO 60 dBA CNEL CONTOUR (FEET)			CNEL AT 100 FEET (dBA)		
		EX + C	EX + C + P	CUMULATIVE SIGNIFICANT IMPACTS	EX + C	EX + C + P	CUMULATIVE SIGNIFICANT IMPACTS
Old Otay Mesa Road	SR-125 to Harvest Rd.	6,539	7,034	495	77.7	78.1	0.3
Airway Road	Sanyo Ave. to Paseo de La Americas	2,816	3,299	483	74.1	74.8	0.7
Siempre Viva Road	SR-905 to Paseo de Las Americas	7,642	13,577	5,935	78.4	80.9	**2.5**
Siempre Viva Road	Paseo de Las Americas to Michael Faraday Dr.	1,616	3,627	2,011	71.7	75.2	**3.5**
Siempre Viva Road	Michael Faraday Dr. to Enrico Fermi Dr.	1,053	3,121	2,068	69.8	74.5	**4.7**
Existing SR-905	South of Siempre Viva Rd.	17,835	19,277	1,442	82.1	82.4	0.3
Sanyo Avenue	Otay Mesa Rd. to Airway Rd.	1,997	2,216	219	72.6	73.0	0.5
Enrico Fermi Drive	Otay Mesa Rd. to Airway Rd.	1,394	2,172	778	71.0	73.0	**1.9**

*Note: All values in **bold** correspond to cumulative noise increases in excess of 1 dBA.*
Source: Urban Crossroads (July 13, 2010)



Source(s): SANDAG, SanGIS, Eagle Aerial (2008)

FIGURE 2.4-1

0 1,000 2,000 Feet

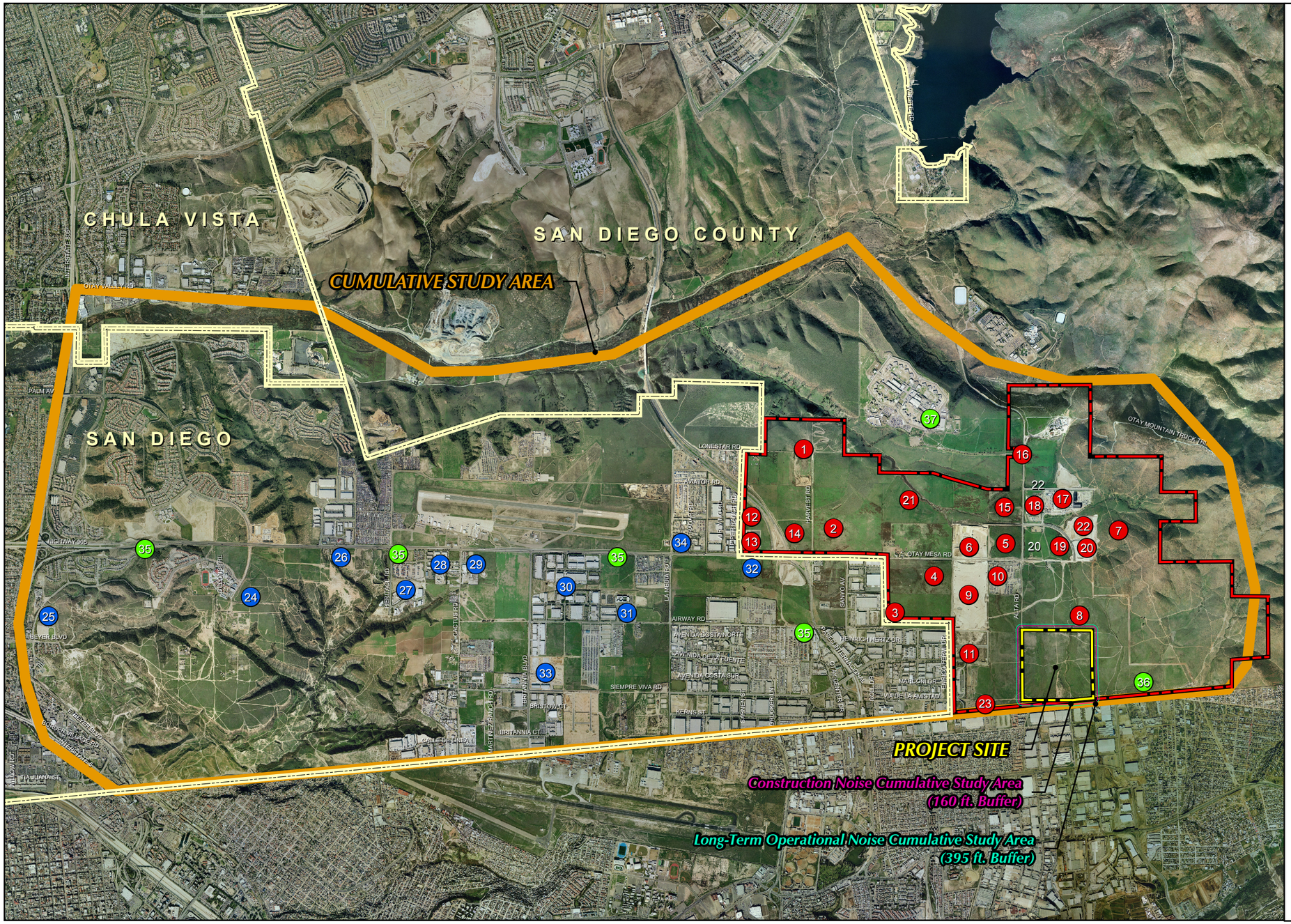
Neaby Residential Receptors

Source(s): SANDAG, SanGIS, Eagle Aerial (2008)

FIGURE 2.4-2

0 300 600 Feet

On- and Off-site Biological Open Space



CUMULATIVE PROJECTS

County of San Diego Projects

1. East Otay Mesa Specific Plan
2. Otay Tech Center
3. Airway Business Center/FedEx
4. Enrico Fermi Industrial Park
5. East Otay Auto Storage
6. East Otay Auto Transfer
7. Otay Hills Quarry
8. Otay Crossings Commerce Park
9. Otay Mesa Travel Plaza
10. East Otay Temporary Fire Facility
11. Burke Minor Subdivision
12. Piper Otay Park Subdivision
13. Pilot Travel Center Site Plan
14. California Crossings
15. CCA San Diego Correctional Facility
16. National Enterprises Auto Storage/Recycling
17. Otay Mesa Generating Project
18. Power Plant Laydown Site
19. Paseo De La Fuente
20. Vulcan Site Grading Plan
21. International Industrial Park
22. Vulcan Batching Plant
23. Rapid Transfer Express

City of San Diego Projects

24. Southview
25. Remington Hills
26. Otay Corporate Center South
27. Pacific Gateway
28. Mesa Business Park
29. Otay Heights Business Park
30. Brown Field Business Park
31. Empire Center
32. San Diego Mesa
33. Just Rite
34. World Petrol III

Other Projects

35. SR-905 (Multiple Points)
36. SR-11 and Otay Mesa East Port of Entry
37. CA Health Care Fac., R. J. Donovan Correctional Facility

East Otay Mesa Specific Plan

Off-Site Cumulative Traffic Noise Study Area

Construction Noise Cumulative Study Area

Long-Term Operational Noise Cumulative Study Area

0 2,000 4,000 Feet

FIGURE 2.4-3

Cumulative Study Area - Noise